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ABSTRACT

Details are provided to the New Jersey Board of Higher Education on the level of basic skills among freshmen admitted to the state's public colleges/universities. Levels of proficiency are estimated from performance on the New Jersey College Basic Skills Placement Test (NJCBSPT). Categories reflect performance of students tested at the campuses of all public colleges and 11 independent colleges. They are separated by public college sectors--county, state, Rutgers, and New Jersey Institute of Technology (NJIT). Results are noted by statewide findings, college sectors, recent and non-recent high school graduates, and demographic data. College basic skills remediation in other states and the outcomes of skills-deficient student in college are described. Results include: the highest percentages of proficient students are found at Rutgers and NJIT; students who graduated high school in the spring of 1987 were slightly more proficient in all three areas than the total population tested; and there is a large proportion of underprepared students in New Jersey. Seven appendices include a description of the NJCBSPT, NJCBSPT mean scaled scores for 1983-1987, a description of the proficiency levels established by the Basic Skills Council, items representative of those included on the NJCBSPT mathematics section, comparison of statewide self-reported student background information 1983-1987, participating independent colleges and universities, and NJCBSPT year to year score equating. Figures and tables are included.(SM)

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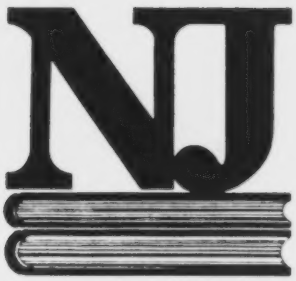

New Jersey College Basic Skills Placement Testing Fall 1987

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Report to the Board of Higher Education on the Results of the New Jersey College Basic Skills Placement Testing

Fall 1987 Entering Freshmen

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EXECUTIVE SUMMARY

This report details for the New Jersey Board of Higher Education the level of basic skills (verbal skills, computation, and elementary algebra) among freshmen admitted to New Jersey's public colleges and universities. Levels of proficiency are estimated from performance on the New Jersey College Basic Skills Placement Test (NJCBSPT). Designed both to provide data for this summary report and to assist colleges in placing already admitted students into remedial or first-level college English and mathematics courses, the NJCBSPT has now been administered in revised and equated forms for each of the last ten years.

The statewide proficiency categories reported here reflect the performance of students tested at the campuses of all public colleges and eleven independent colleges. The results are also separated by public college sectors: county college, state college, Rutgers, and NJIT.

The results represent all students tested at the colleges: full- and part-time; regular, special, and EOF admits combined. From March through October of 1987, students tested totaled 42,603.[1] Of these, 28,169 were recent (1987) high school graduates. Students are tested in reading, sentence skills, essay, computation and elementary algebra. Proficiency in verbal skills is measured by a "Total English" composite score derived from the Reading Comprehension, Sentence Sense and Essay tests. The students

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[1]Computer tapes containing data for 1750 additional students from Bergen Community College and Union County College arrived too late for processing.

entering in the fall of 1987 were judged to have the following levels of proficiency in basic skills according to the standards of college readiness set by the Basic Skills Council:

In verbal skills:

27% appeared proficient,
40% appeared proficient in some areas, and
34% lacked proficiency.

In computation:

31% appeared proficient,
23% appeared proficient in some areas, and
46% lacked proficiency.

In elementary algebra:

15% appeared proficient,
29% appeared proficient in some areas, and
57% lacked proficiency.

The proportions of students in each proficiency category essentially mirror those of former years and indicate that the basic skills preparedness of the entering freshmen across the higher education system as a whole is below what most faculty expect. A longitudinal perspective on the data yields no trends either up or down, but rather small fluctuations of from one to three percentage points in the size of the middle category.

Results by College Sector

The proficiency results from the NJCBSPT correlate with the admissions selectivity of the respective college sectors. The highest percentages of proficient students are found at Rutgers and NJIT. The state college proficiencies are somewhat lower, and the open-admission county community colleges enroll, on average, the least proficient students. It should be noted, however, that all sectors enroll underprepared students. The percentage of students in each proficiency category for each public college sector follows.

	APPEAR PROFICIENT	APPEAR PROFICIENT IN SOME AREAS	LACK PROFICIENCY
	%	%	%
COUNTY COLLEGES			
Verbal Skills	15	39	46
Computation	16	22	62
Elementary Algebra	4	20	76
STATE COLLEGES			
Verbal Skills	34	44	22
Computation	38	29	33
Elementary Algebra	16	42	42
RUTGERS			
Verbal Skills	63	30	7
Computation	72	17	11
Elementary Algebra	52	35	13
NJIT			
Verbal Skills	35	41	24
Computation	75	14	11
Elementary Algebra	58	34	8

The system-wide proficiency results in this report may not necessarily coincide with the percentages of students placed by colleges into remedial courses because the NJCBSPT is but one of the indicators the colleges use in making placement decisions.

Results for Recent High School Graduates

Students who graduated in the spring of 1987 and were admitted to New Jersey colleges for the fall of 1987 made up 66% (28,169) of the test-takers. (This is four percent higher than in most recent years.) This group of students was slightly more proficient in all three areas than the total population tested.

In verbal skills:

30% appeared proficient,
42% appeared proficient in some areas, and
28% lacked proficiency.

In computation:

37% appeared proficient,
25% appeared proficient in some areas, and
38% lacked proficiency.

In elementary algebra:

20% appeared proficient,
36% appeared proficient in some areas, and
44% lacked proficiency.

Demographics And Stability of Test Results

A new form of the NJCBSPT is prepared each year. New items are pre-tested and some of those items become operational the following year, but the test development committees are careful to ensure that the scaled scores of any test form reflect actual level of ability, not a change in the level of difficulty of its items. A number of items (called "equators") are repeated, and the performance of the new cohort of students on these equators is used to devise the formula for converting raw scores to scaled scores. (For more detail, see Appendix G.) This procedure assures comparability of scaled scores from year to year; it also assures us that any actual change in basic skills proficiency among students entering public colleges would be reflected in the results of NJCBSPT.

These NJCBSPT results provide a snapshot of the basic academic skills preparation of the fall 1987 freshmen. In the past ten years of reporting these results, the Basic Skills Council has been impressed by three consistencies: 1) the large proportions of underprepared students; 2) the stability of the test results from year to year; and 3) the stability of the demographic variables in the student population. The male/female ratio, the full-time/

part-time enrollment status, the percentage of recent high school graduates, the percentage of students from academic or college-preparatory programs, and the percentage whose first language is English--all typically have not varied by more than a few percentage points over the years. We have come to the view that with such a large population (42,000 to 50,000 students) small changes of academic preparedness within subgroups tend to cancel each other out. The reality is that test results for a population of this size do not change abruptly unless one or more new conditions arise, such as more restrictive college admissions policies, a major influx of adult, non-diploma holding students, or a major upgrading of the skill levels of recent high school graduates. When a passing score on the High School Proficiency Test becomes a condition for graduation (1989), we might expect some improvement. The New Jersey public higher education system, in order to maintain its goals of access and excellence for a large and diverse population, must continue to provide basic skills courses for a third or more of its entering class.

INTRODUCTION

The New Jersey Basic Skills Assessment Program was designed in 1978 with two purposes. First, it was intended to generate reports to the Board of Higher Education on the status of basic skills preparedness (in reading, writing, computation and elementary algebra) of the entering freshman class in public colleges and universities. The second, and equally important, purpose was to provide information to aid colleges in placing students in appropriate courses during the freshman year. These dual purposes remain central to the nature of the program.

"Basic Skills" refers to those skills of thought and communication that an individual needs not only to take advantage of the opportunities offered by a college education but also to become a fully participating member of society. These are not the minimal "coping skills" or "life skills" which many consider essential to mere survival (e.g., balancing a checkbook, reading a magazine, filling out a job application). Rather, the "basic skills" of reading, writing, and mathematics are essential for thinking, learning, and succeeding within the context of a college curriculum. They are fundamental building blocks which underlie all adult learning and which the Basic Skills Council[1] believes are required for full participation in our society.

In 1978, the Council, in its first report to the Board of Higher Education, defined and clarified what it meant by "basic skills":

---

[1]The New Jersey Basic Skills Council is an advisory group of twelve faculty and administrators drawn from each of the college sectors in the state of New Jersey.

> By "basic skills" the Council means the tools of intellectual discourse used in common by participating members of all academic communities. These tools are the language of words and the language of mathematics. Students need these tools to extract information, to exercise and develop the critical faculties of the mind, and to express thoughts clearly and coherently.
>
> Without them, learning is impaired, communication is imprecise, understanding is impossible. A test of "basic skills," therefore, is a test to determine whether an individual has developed the practical working skills of verbal and mathematical literacy needed to take advantage of the learning opportunities that colleges provide.
>
> To define "basic skills" in this way is not to deny the validity of other modes of communication--within the artistic realm of discourse, for instance, the languages of music, motion, image, color, light, and texture express a universe of perceptions, feelings, and emotions which cannot be expressed adequately by words and numbers and logic alone. Nor is the Council's definition of the "basic skills" inimical to the value of diversity. We are, to the contrary, exceedingly sensitive to the differences between colleges: differences in their students; differences in their curricula and pedagogical philosophies; differences in their missions. But in one respect all colleges are identical: their ultimate purpose is to foster learning. The Council asserts unequivocally that the "basic skills" of reading, writing, and mathematics are a prerequisite to learning at the college level. If the possession of these skills is "standardization," we believe that standardization in this sense is good.

The Basic Skills Council continues to subscribe to this definition, which is made concrete each year in the development of the NJCBSPT.

Nature of the Test

The NJCBSPT is a three-hour-and-twenty-minute examination consisting of an essay and four multiple-choice sections: Reading Comprehension, Sentence Sense, Computation, and Elementary Algebra. (See Appendix A for a more detailed description of the NJCBSPT.)

The test is required of all freshmen, full- and part-time, entering New Jersey public colleges. In addition, eleven independent colleges in the state voluntarily administer the NJCBSPT to their entering freshmen. (See Appendix F for a list of these participating colleges and universities.)

A new form of the NJCBSPT is developed each year and is statistically equated to the previous forms. (See Appendix G for a brief explanation of the equating procedure.) The scores are reported in scaled score format so as to preserve comparability from year to year. (See Appendix B for data on scaled score means and standard deviations for each test section over the last five years.)

The NJCBSPT was developed by the Basic Skills Council and first administered to freshmen entering public colleges in the fall of 1978. Since then, more than 540,000 students have taken the exam. Studies performed at both the state level and at local colleges have confirmed that the New Jersey College Basic Skills Placement Test is both reliable and valid. (Information on NJCBSPT publications and reports can be found on the inside back cover of this booklet.) A technical analysis monograph on the NJCBSPT's statistical properties is provided by ETS each year and is available upon request. The test measures skills that students entering college should have. Indeed, the Basic Skills Council believes that the level of skills in reading, writing, and mathematics tested by the NJCBSPT is minimal for all students graduating from high school whether or not they intend to enroll in college.

The NJCBSPT is a criterion-referenced examination. The test questions address specific skills (such as understanding the main idea in a reading passage; writing in an organized fashion; solving algebraic equations, etc.) which are judged as the minimum necessary to begin college work. Students with adequate skills achieve high scores on the test; superior skills, however, can not be discerned

from the test scores. The distribution of scores on the multiple choice sections of the test is not "normal" in the statistical sense, since the test is designed to make finer distinctions at the lower end of the range than at the upper end.

The purpose of the test is placement at levels at and below the first-level college courses. It is designed to be relatively easy for well prepared students and to discriminate among underprepared students, thus affording colleges the needed range of scores to facilitate placement at several remedial levels.

A new version of NJCBSPT is issued in March of each year, and colleges administer the test locally, on their own schedules, through February of the following year. The student answer sheets (and computer data tapes, if applicable) are sent to Educational Testing Service for scoring and data analysis under contract with the Department of Higher Education.

Placement

Students are tested only after admission to college and the results of the tests are used, in conjunction with other information, for initial placement in English and mathematics courses. Proficiency categories for purposes of statewide reporting are defined by the Basic Skills Council, but individual institutions set their own algorithms for appropriate student placement using NJCBSPT test scores and other available information. No public college uses placement levels below the Council's suggested minimums. The Council has consistently recommended that placement be based not on one subtest score but on a combination of several test scores and other information (such as the Scholastic Aptitude Test scores, Test of Standard Written English score, and high school record).

Reporting Format

Test results for typical large scale achievement and/or aptitude tests (such as the Scholastic Aptitude Test) are reported in terms of mean scaled scores and standard deviations. While these measures are useful for these types of instruments (and are included here for the NJCBSPT in Appendix B), the Basic Skills Council believes that for an instrument whose purpose is placement, the percentages of students who need, might need, or do not need remediation are the most important data to transmit to the Board of Higher Education. Consequently, the results reported here are in terms of the percentages of students falling into three proficiency categories: "Lacked Proficiency," "Appeared Proficient in Some Areas," and "Appeared to be Proficient." Descriptions of these levels as related to test performance can be found in Appendix C. The uppermost category, "Appeared to be Proficient," is so named because the NJCBSPT does not contain a sufficient number of "difficult" items to ascertain with confidence that a given student is surely proficient in the skill area.

RESULTS

Statewide Findings

The proficiencies described in this report are based on the scores of 42,603 students tested at New Jersey public (and 11 private) colleges between March and October of 1987. This total excludes 1,750 students from Bergen Community College and Union County College from which data arrived too late for processing. Not all these students actually enrolled in New Jersey's colleges by the fall of 1987. At the time of this writing, official statewide enrollment figures were not available. In the summer and fall of 1986, 12% of the students tested did not enroll in the fall 1986 semester.

This year's results differ little from those of previous years. Large proportions (in some sectors the majority) of students enter our colleges lacking proficiency in at least some areas of reading, writing, computation, and elementary algebra. Table 1 and Figures 1-4 display the levels of proficiency exhibited by our entering freshmen in 1987. The verbal skills area is based on the NJCBSPT Total English score, a composite of the Reading Comprehension, Sentence Sense, and Essay subtests. Computation and elementary algebra are reported individually.

Table 1 displays the statewide results for 1983 through 1987. Over this time, the stability of the results is striking; the percentages have changed by no more than three points over the five years displayed. This stability is due, in part, to the large number of students being tested. To effect a change of but one percentage point within a proficiency category, approximately 450 students must have higher or lower scores in a given year. The stacked bars in Figure 1 display this longitudinal consistency graphically. Furthermore, a similar pattern appears for each year back to 1978, the first year of testing.

Of our entering students in 1987, in verbal skills:

34% lacked proficiency,
40% appeared proficient in some areas, and
27% appeared to be proficient.

In computation:

46% lacked proficiency,
23% appeared proficient in some areas, and
31% appeared to be proficient.

In elementary algebra:

57% lacked proficiency,
29% appeared proficient in some areas, and
15% appeared to be proficient.

Most public colleges and universities in the state use multiple criteria for placing students into either remedial or regular college-level courses. The system-wide result of these practices is that virtually all of the enrolled students in the "Lacked Proficiency" category and some of the students in the "Appeared Proficient in Some Areas" category are identified for remedial courses. The 1987 basic skills assessment clearly indicates that the extent of remedial instruction that must be provided by our institutions has not diminished.

Results by College Sector

The percentages of students in each proficiency category for the four sectors of New Jersey public colleges (19 county colleges, nine state colleges, three campuses of Rutgers and the New Jersey Institute of Technology [NJIT]) also display the stability noted in the statewide results. Tables 2 through 5 present the results for the years 1983-1987 for each sector.

By virtue of their selective admissions processes, Rutgers, NJIT and the state colleges enroll higher percentages of students who "appear proficient" than do the county colleges, which enroll students through an "open admissions" policy. Variations in the proficiency percentages in Tables 2 through 5 must be interpreted cautiously. Yearly raw-to-scaled-score conversions and consequent "rounding" of the percentages in the proficiency categories can have as much as a three-percentage-point effect on the size of the category.

Consequently, no trend should be inferred from these data until the difference in the categories reaches five percentage points in one year or a smaller change consistent over many years. By these criteria, there are no substantive changes to report.

Recent High School Graduates

Of the 42,603 students tested, 28,169 or 66% were "recent" high school graduates, i.e., those who graduated in 1987 (see Appendix B, Part 6). These recent graduates are not evenly distributed among the college sectors. Of all recent graduates, 45% were tested at the two-year institutions, 27% were tested at the state colleges, 19% were tested at Rutgers and two percent were tested at NJIT. The college sectors differ enormously in the percentage of their freshmen test-takers who are recent graduates. Recent graduates as a percentage of test-takers, in descending order, were 93% at NJIT, 91% at Rutgers, 79% among the state colleges and 52% among the county colleges.

The proficiency percentages of recent graduates indicated that about a third needed remedial work in reading or writing. Even higher percentages (at least 38% in computation and at least 44% in elementary algebra) needed remedial mathematics work. Table 6 displays the statewide results for recent high school graduates from 1983-1987. Figure 5 displays the following 1987 proficiency category breakdown:

In verbal skills:

30% appeared proficient,
42% appeared proficient in some areas, and
28% lacked proficiency.

In computation:

37% appeared proficient,
25% appeared proficient in some areas, and
38% lacked proficiency.

In elementary algebra:

20% appeared proficient,
36% appeared proficient in some areas, and
44% lacked proficiency.

These results, like the others in this report, have been stable from year to year.

Results by High School Program. Students admitted to the New Jersey public higher education system are diverse, not only in terms of their age and the year of their high school graduation, but also in the type of high school programs they took before going to college. It should be noted that according to students' self-reports, 76% of the 1987 high school graduates came from an academic or college preparatory program. The other program types included general (15%), career oriented, i.e., business, vocational or industrial arts (8%), and other (1%).

The college basic skills proficiency of students in these subgroups varies considerably. Table 6A displays the verbal skills proficiency results for each of the high school programs. Two findings emerge from Table 6A. First, it is clear that the recent graduates from academic programs have considerably better reading and writing skills than students who elected other programs. Second, it is also clear, however, that only 37% of the "college-prep" students appeared proficient, and at least 18% will need remedial work in college. These figures are discouraging.

High School Mathematics and College Proficiency. The traditional mathematics preparation for college is at least three years of high school courses, including Algebra I, II and Geometry. Course variations, however, exist in high school curricula. Many students take a fourth year of high school mathematics, but only a minority (about 11% of the recent graduates tested) report taking calculus during this fourth year. Tables 7 and 8 display the relationship between high school mathematics curricula and subsequent proficiency levels on the NJCBSPT Computation (Table 7) and Elementary Algebra (Table 8) tests. (Data in Tables 7 and 8 include only New Jersey graduates who reported that their best language was English.) The

data, as in previous years, indicate that the groups of students who took fewer than four years of mathematics are highly unlikely to display proficiency in elementary algebra. For example, in Table 8, course category #2 includes the 1,396 students who took only one year of algebra in high school. Of these, only three students scored high enough to "appear proficient" in elementary algebra. In category #5, of the students who took the typical "college prep" program of Algebra I, II and Geometry, only four percent were proficient in elementary algebra. This means that of 6,886 students in this category, only 292 answered correctly 25 or more of 30 elementary algebra questions. In category #9, students who completed a "college prep" sequence that included calculus were much more likely to be proficient (69%) in elementary algebra. Table 17 indicates that Rutgers and NJIT together enroll 52% (2,516 of 4,852) of all the tested students who took calculus in their high school years.

Three generic levels of preparation emerge from the course categories in Tables 7 and 8. First, students who have completed two (or fewer) years of mathematics show virtually no probability of being proficient in elementary algebra. Second, students who complete three years of mathematics (including geometry and trigonometry) have approximately a 20% probability of being proficient in elementary algebra. Finally, students who complete four years of mathematics including calculus have almost a two-thirds chance of being proficient in elementary algebra. The NJCBSPT Elementary Algebra test is composed of direct questions on algorithmic skills typically learned in the ninth grade. (Representative question types can be seen in Appendix D.)

It should be noted that the study of calculus is not necessarily the causal variable in ensuring proficiency in algebra. It is probably true that only the best-prepared students from the three-year high school math sequence elect calculus. However,

students who take senior math courses other than calculus also display slightly higher algebra proficiencies than the students completing only the three-year sequence. The Council would like to see a strengthening of all mathematics instruction--from arithmetic through elementary algebra--so that more students will be sufficiently prepared to elect the fourth year of high school mathematics.

Non-Recent High School Graduates

Thirty-four percent of the students tested received their high school diplomas before 1987 (see Table 12). In fact, 18% of the statewide total of students tested received their diplomas prior to 1985. The great majority of the non-recent graduates tested (81%) were tested in the community colleges.

The test results for the 14,715 non-recent graduates are lower than for the recent graduates. Table 9 displays the proficiency levels seen for these students from 1983 through 1987. In each skill area there is a slight trend downward. A comparison of Table 6 (recent graduates) with Table 9 reveals that whereas 28% of 1987 graduates appear to need remedial work in verbal skills, 44% of the non-recent graduates were in the "lacking proficiency" category. In computation, 38% of recent graduates lacked proficiency compared to 62% of the non-recent graduates. In elementary algebra, 44% of the recent graduates lacked proficiency compared with 80% of the non-recent graduates.

It should be understood that these comparisons are made not between graduating classes from year to year but between the 1987 class and other students who, for a variety of reasons, arrived at the doors of our colleges one or more years later than is "traditional." Since colleges mail each student an information

bulletin which contains sample questions from each subtest, students who have been out of school for a while have the opportunity to prepare for the placement test if they choose to do so.

Demographic Information

Students taking the NJCBSPT answer a series of "Background Information" questions. Summary data on this self-reported information are presented in Tables 10 through 21 and in Appendix E. On most of the variables, the population is as consistent across time as the test results have been: the majority (54%) of students in the system continue to be female (Table 11); 74% expect to enroll full-time; 63% took a traditional academic high school program before going to college (Table 13). Tables 14 through 17 also reveal data consistent with previous years. The students who place themselves at or near the top of their high school class tend still to enroll at the more selective colleges. Almost all students take four years of English in high school; about half take four years of mathematics, about 10% reaching the level of calculus.

Over the last six years a consistent five percent of the test takers reported that English was not their best language and 15% said a language other than English was spoken at home (Table 18). The Basic Skills Council's policy is to defer the testing of students for whom English is a second language until they complete their English instruction. The consistency of the five percent figure for "ESL" test takers indicates that our colleges have not yet as a group seen the increased proportion of ESL students that has been predicted from the increase of such persons in the general population.

In Table 21, 44% of the statewide population considered themselves "Above Average in Mathematical Ability" and 87% considered themselves "Average or Above." The proficiency data in

this report indicate that only 13% of these students appear proficient in ninth grade algebra, yet only a third of the students "Want Help to Improve" in mathematics. Half of the students, 51%, felt themselves to be "Above Average in Written Expression" and only four percent felt they were "Below Average." The test results indicate that 34% lack proficiency in verbal skills. Only 24% of students felt that they needed help to improve their writing. The gap between students' perception of their math and verbal abilities and their actual proficiency as judged by the test scores continues to be distressingly wide. Students often arrive on campus feeling that they are prepared for freshman courses only to be shocked by being placed into one or more remedial courses.

Students placed into several basic skills courses face special difficulties. Colleges must consider what college-level courses are appropriate for these students to take while in remediation. The issue of how to handle such "concurrent enrollment" is one the Basic Skills Council will be discussing with the colleges during 1988-89.

COLLEGE BASIC SKILLS REMEDIATION IN OTHER STATES

The problem of providing academic support for underprepared students who enter college is neither new nor confined to the state of New Jersey. In the last five years the magnitude of the problem nationally has become better defined. A national survey[2] conducted in 1983-84 by the U.S. Department of Education revealed that 82% of an estimated 2,300 institutions offered at least one course in remedial mathematics, reading or writing. Testing and placement criteria varied widely across the country, but 25% of all college freshmen were estimated to be enrolled in remedial

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[2]Bulletin of the National Center for Education Statistics, September 1985, Washington, DC.

mathematics, 21% in remedial writing and 16% in remedial reading. More recently, the Southern Regional Education Board reported a survey[3] of 404 institutions in its geographic region. Over 90% of the institutions have some form of remediation. However, there was almost no general agreement on what is considered "college-level" or remedial placement. Further, cut-off scores on placement tests varied so widely among southern institutions and states as to spotlight the lack of a clear definition of college-level study at these institutions. For example, one college required only a 14th percentile score on a mathematics test to begin college-level courses, while at another college students were required to score at the 94th percentile on the same test. Fortunately for New Jersey, the Council's proficiency categories provide a common definition of "college-level" that is lacking in other states.

New Jersey has developed one of the earliest comprehensive statewide programs of placement testing, remediation and college program review in the nation. Only a few other states have a placement system comparable to the NJCBSPT. Among the similar programs are the City University of New York system, the Georgia Board of Regents, the California state college-level system, the Florida state colleges and the Tennessee Regents system. Of these only Tennessee has made testing results available to the public. The Tennessee state system uses the College Board's Multiple Assessment Program (MAPS) tests which are similar to the NJCBSPT. For the fall of 1986 Tennessee reported[4] that by its statewide criterion, 49% of its freshmen were required to enroll in remedial/developmental reading courses, 43% were required to enroll

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[3] Memorandum of the Southern Regional Education Board, March 13, 1987, Atlanta, GA.

[4] Academic Assessment and Placement Program (AAPP) Feedback Report, Tennessee State Board of Regents, January 9, 1987, Nashville, TN.

in remedial/developmental writing, 26% in remedial arithmetic and 32% in remedial algebra. Unlike New Jersey, Tennessee has an exemption policy which may lower somewhat the percentage of students (especially in mathematics) who require remediation. Tennessee's remedial placements appear to exceed those of New Jersey's freshmen in reading/writing. The comparison in mathematics is not easily made since the two testing programs appear to follow different standards.

OUTCOMES OF SKILLS-DEFICIENT STUDENTS IN COLLEGE

This report is one of a series that the Basic Skills Council presents to the Board of Higher Education. The sequel to the test results is the Report on the Character and Effectiveness of Remedial Programs, an analysis of the outcomes of the students who are placed into the 119 remedial programs in New Jersey's public colleges and universities. The data in the "Effectiveness Report" are collected after two years have passed. Many severely deficient students require three to four semesters to complete their remedial work. The outcomes data pertaining to the students tested for this report, therefore, will be collected in the summer of 1989.

Reports on previous two-year cohorts have indicated that for those students who complete their college's prescribed remedial sequence, their "successful survival rate" (percentage of retention with a "C" average), was comparable to non-remedial students. In contrast, the successful survival rate of students who did not complete remediation was only about a third that of those students who completed remediation.

Beginning with the students who entered in fall 1987, those exiting college remedial programs will be re-tested with an alternate form of the NJCBSPT. The expectation is that the preponderance of such students in a given program will, on re-test, reach or exceed

their college's placement minimums for entry into the college-level writing and mathematics courses. Such re-testing will not be the only measure which will determine whether a student moves on to the college-level course. Faculty judgment on course grades and exams other than NJCBSPT will continue to determine whether individual students move into college-level courses. The Basic Skills Council will monitor the results in terms of percentages in each program who reach the minimum standard. This re-test performance, in aggregate form, is one of the multiple indicators the Basic Skills Council uses to assess the effectiveness of public college remedial programs.

FIGURE 1

Levels of Student Proficiency
1983-1987 Statewide

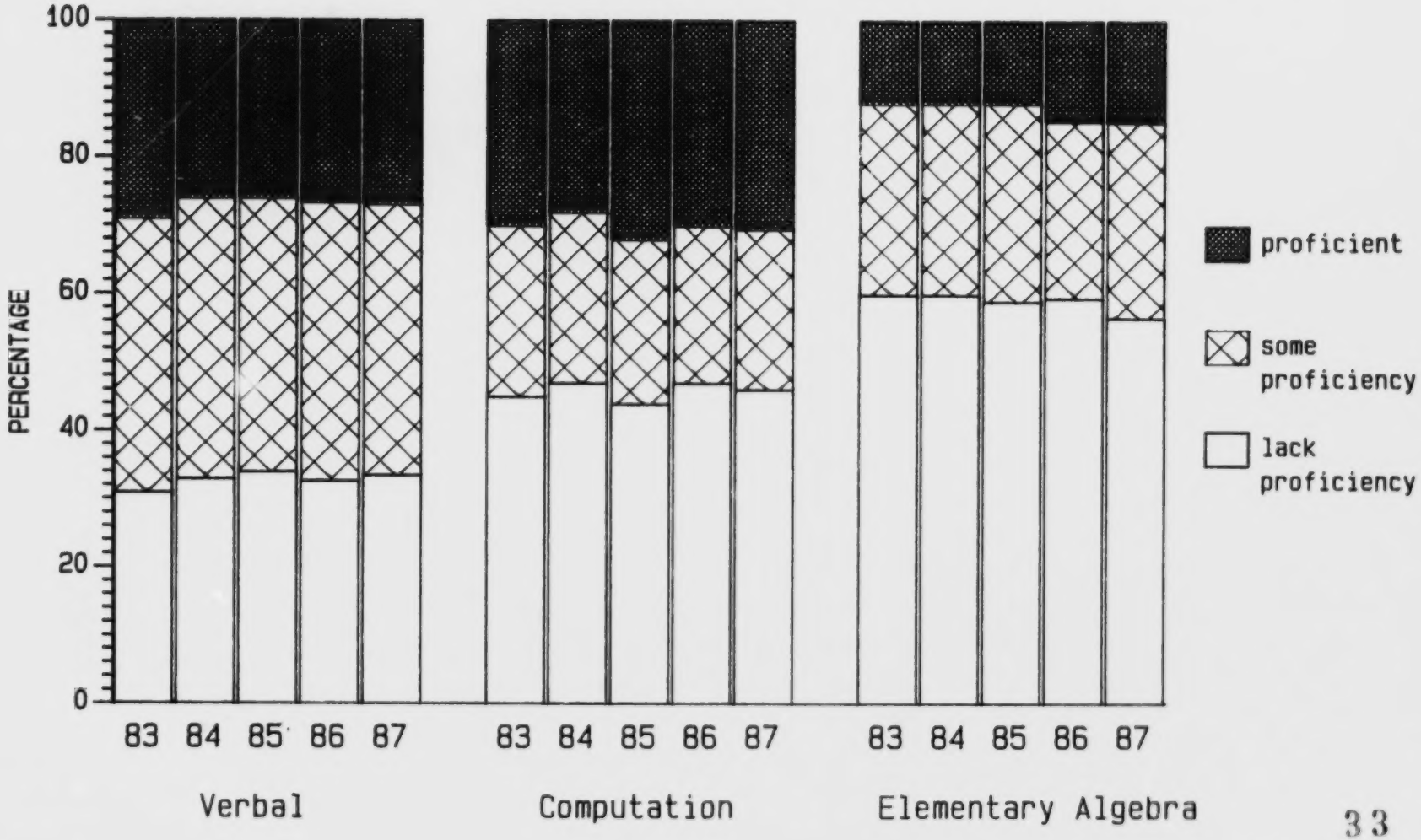
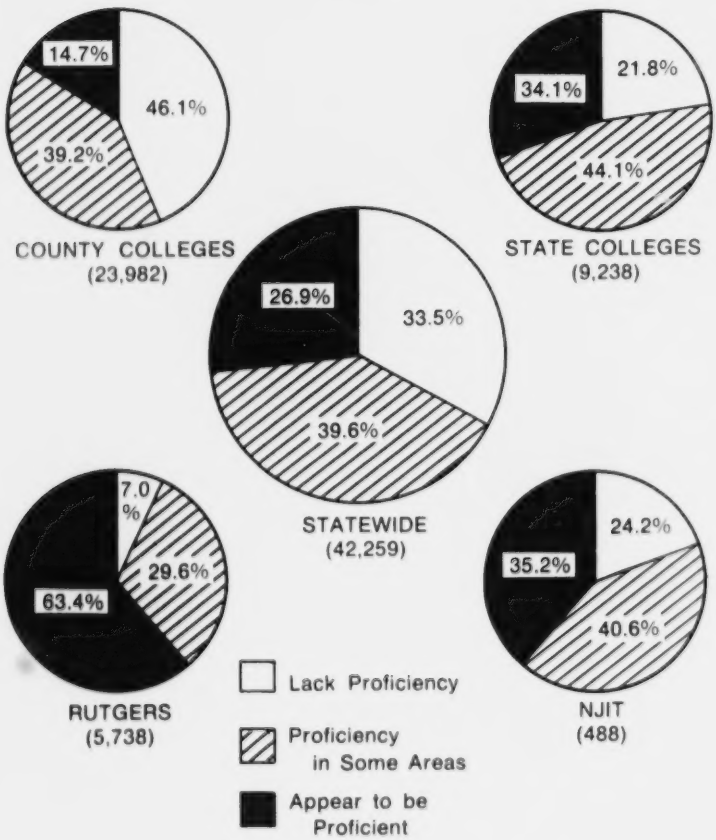


FIGURE 2

Levels of Student Proficiency by Sector
Fall 1987

Verbal*



*Based on Total English composite score (Reading Comprehension, Sentence Sense and Essay).

FIGURE 3

Levels of Student Proficiency by Sector
Fall 1987

Computation

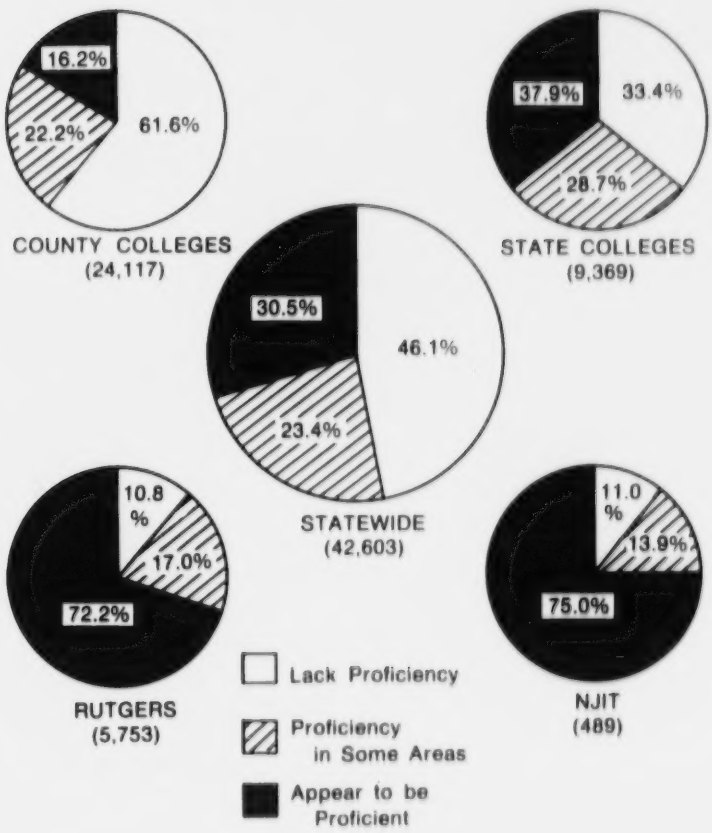


FIGURE 4

Levels of Student Proficiency by Sector
Fall 1987

Elementary Algebra

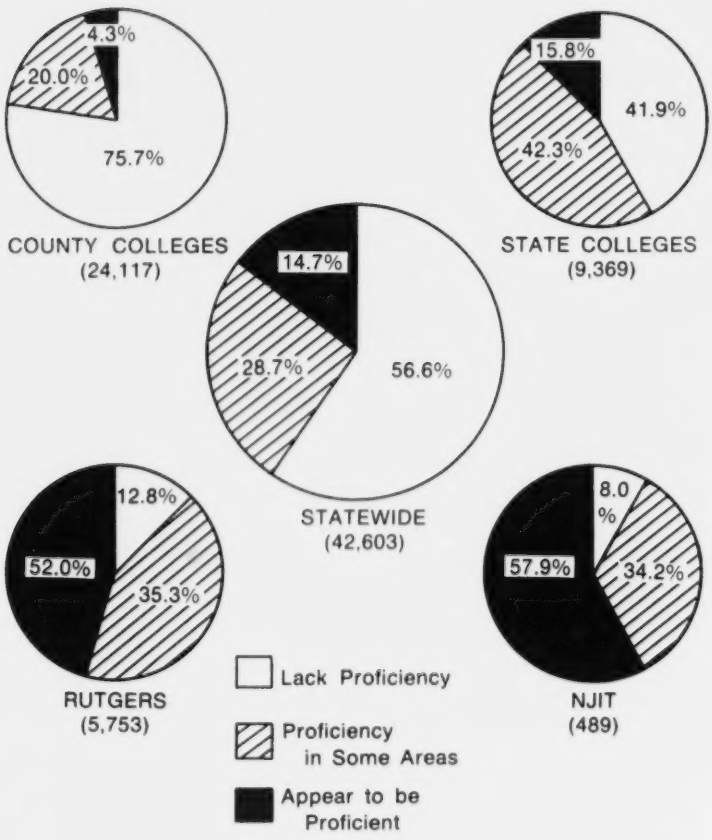
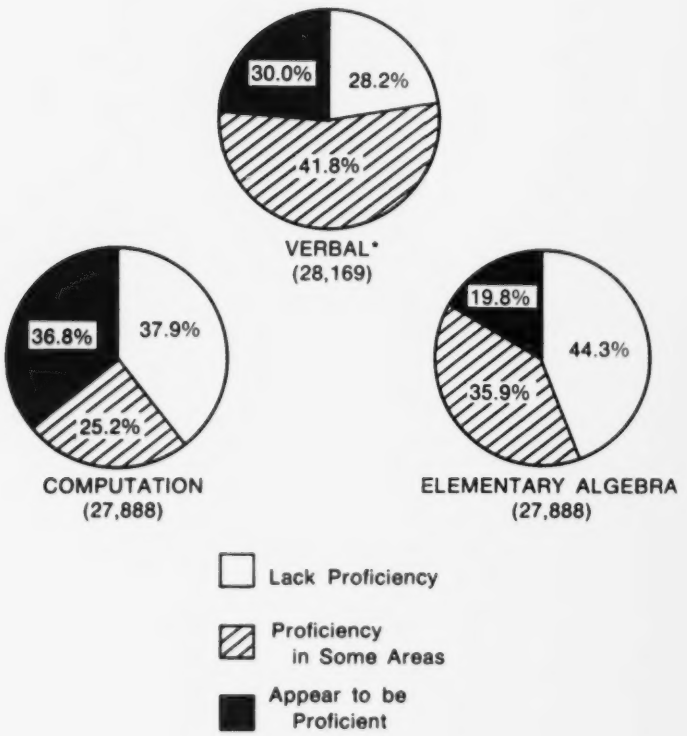


FIGURE 5

Levels of Student Proficiency by Skill Area
Recent High School Graduates
Fall 1987



*Based on Total English composite score (Reading Comprehension, Sentence Sense and Essay).

TABLE 1*

Five Year Comparison of Statewide Test Results[1]

1983 - 1987

	1983		1984		1985		1986		1987	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	15,800	31	15,423	33	14,955	34	14,307	33	14,170	34
Appear Proficienct in Some Areas	20,387	40	18,899	41	17,862	40	17,834	41	16,725	40
Appear to be Proficient	14,442	29	11,853	26	11,376	26	11,662	27	10,364	27
COMPUTATION										
Lack Proficiency[2]	23,120	45	21,806	47	19,352	44	20,878	47	19,651	46
Appear Proficienct in Some Areas	12,606	25	11,481	25	10,679	24	10,404	23	9,969	23
Appear to be Proficient	15,595	30	13,178	28	14,313	32	13,171	30	12,983	31
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	30,607	60	27,703	60	26,087	59	26,444	60	24,110	57
Appear Proficiency in Some Areas	14,398	28	12,930	28	13,069	29	11,499	26	12,248	29
Appear to be Proficient	6,316	12	5,832	12	5,188	12	6,510	15	6,245	15

*Includes students who were admitted but who may not have enrolled in college after being tested. Students from the participating independent colleges are included in the statewide totals. (See Appendix F for a list of these colleges.)

[1]See Appendix C for a description of proficiency categories.

[2]Includes those students not attempting this portion of the test.

TABLE 2

Five Year Comparison of Sector Test Results[1]

County Colleges

1983 - 1987

	1983		1984		1985		1986		1987	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	12,749	42	12,323	44	11,732	45	11,370	43	11,064	46
Appear Proficient in Some Areas	12,290	40	11,192	40	10,414	40	10,575	40	9,396	39
Appear to be Proficient	5,472	18	4,549	16	4,069	16	4,264	16	3,522	15
COMPUTATION										
Lack Proficiency[2]	17,806	58	16,905	60	15,121	58	15,866	61	14,859	62
Appear Proficient in Some Areas	7,277	24	6,592	23	6,208	24	5,892	23	5,344	22
Appear to be Proficient	5,594	18	4,694	17	4,960	19	4,263	16	3,914	16
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	23,413	76	21,404	76	20,140	77	20,137	77	18,251	76
Appear Proficienct in Some Areas	6,000	20	5,591	20	5,197	20	4,718	18	4,819	20
Appear to be Proficient	1,264	4	1,196	4	951	4	1,166	5	1,047	4

[1]See Appendix C for a description of proficiency categories.

[2]Includes those students not attempting this portion of the test.

TABLE 3

Five Year Comparison of Sector Test Results[1]

State Colleges

1983 - 1987

	1983		1984		1985		1986		1987	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	2,109	20	2,152	22	2,156	24	1,986	23	2,015	22
Appear Proficient in Some Areas	4,787	44	4,526	47	4,303	47	4,124	47	4,076	44
Appear to be Proficient	3,911	36	2,953	31	2,710	30	2,694	31	3,147	34
COMPUTATION										
Lack Proficiency[2]	3,621	33	3,473	36	2,897	31	3,185	36	3,127	33
Appear Proficient in Some Areas	3,280	30	3,011	31	2,743	30	2,545	29	2,691	29
Appear to be Proficient	4,080	37	3,283	34	3,597	39	3,144	35	3,551	38
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	5,035	46	4,546	47	4,110	44	4,108	46	3,923	42
Appear Proficient in Some Areas	4,572	42	4,038	41	4,153	45	3,455	39	3,965	42
Appear to be Proficient	1,374	13	1,183	12	974	11	1,311	15	1,481	16

[1]See Appendix C for a description of proficiency categories.

[2]Includes those students not attempting this portion of the test.

TABLE 4

Five Year Comparison of Sector Test Results[1]

Rutgers

1983 - 1987

	1983		1984		1985		1986		1987	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	395	6	399	7	466	7	465	7	402	7
Appear Proficient in Some Areas	1,885	30	1,956	33	2,167	33	2,161	32	1,698	30
Appear to be Proficient	3,959	64	3,486	60	3,912	60	4,125	61	3,638	63
COMPUTATION										
Lack Proficiency[2]	624	10	577	10	596	9	764	11	619	11
Appear Proficient in Some Areas	1,134	18	1,177	20	1,214	18	1,269	19	980	17
Appear to be Proficient	4,493	72	4,102	70	4,740	72	4,720	70	4,154	72
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	864	14	738	13	878	13	894	13	735	13
Appear Proficient in Some Areas	2,447	39	2,291	39	2,863	44	2,429	36	2,028	35
Appear to be Proficient	2,940	47	2,827	48	2,809	43	3,430	51	2,990	52

[1]See Appendix C for a description of proficiency categories.

[2]Includes those students not attempting this portion of the test.

TABLE 5

Five Year Comparison of Sector Test Results[1]

NJIT

1983-1987

	1983		1984		1985		1986		1987	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	87	15	106	20	115	23	91	19	118	24
Appear Proficient in Some Areas	250	42	204	38	216	43	199	42	198	41
Appear to be Proficient	262	44	231	43	166	33	182	39	172	35
COMPUTATION										
Lack Proficiency[2]	27	5	43	8	27	5	29	6	54	11
Appear Proficient in Some Areas	80	13	91	17	70	14	77	16	68	14
Appear to be Proficient	492	82	407	75	400	80	366	78	367	75
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	23	4	31	6	22	4	20	4	39	8
Appear Proficient in Some Areas	212	35	208	38	215	43	142	30	167	34
Appear to be Proficient	364	61	302	56	260	52	310	66	283	58

[1]See Appendix C for a description of proficiency categories.

[2]Includes those students not attempting this portion of the test.

TABLE 6

Five Year Comparison of Statewide Results for Recent High School Graduates[1]

1983 - 1987

	1983		1984		1985		1986		1987	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	8,424	26	8,289	29	7,977	29	7,637	28	7,940	28
Appear Proficient in Some Areas	13,716	43	12,548	44	11,977	43	11,793	43	11,775	42
Appear to be Proficient	9,896	31	7,943	28	7,837	28	8,057	29	8,454	30
COMPUTATION										
Lack Proficiency[2]	12,132	38	9,189	38	9,667	35	10,774	39	10,594	38
Appear Proficient in Some Areas	8,493	26	6,549	27	6,985	26	6,777	25	7,030	25
Appear to be Proficient	11,611	36	8,303	35	10,639	39	9,893	36	10,264	37
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	15,442	48	11,258	47	12,662	46	12,739	46	12,354	44
Appear Proficient in Some Areas	11,439	35	8,874	37	10,280	38	9,085	33	9,999	36
Appear to be Proficient	5,355	17	4,009	16	4,389	16	5,623	20	5,535	20

[1]For each year, the most recent high school graduates are those who graduated the spring prior to their enrollment in college.

[2]Includes those students not attempting this portion of the test.

TABLE 6A

1987 New Jersey High School Graduates*
Verbal Proficiency Categories by High School Program Type

High School Program	n	Lacking Proficiency	Appear Proficient In Some Areas	Appear Proficient
College Prep	18,388	18%	44%	37%
General	3,414	52%	37%	12%
Bus/Voc/Ind Arts	1,840	55%	38%	7%
GED	46	70%	26%	4%
Other	125	62%	31%	7%
Sub Total	23,813			
Out of State and/or Limited English	4,356			
All 1987 Graduates	28,169	28%	42%	30%

*Recent High School Graduates are those who graduated the spring prior to their enrollment in college. Limited English proficient students are excluded, as well as out of state graduates.

TABLE 7

Relationship Between Mathematics Courses Completed in High School and the Computation Proficiency[1] of the Students Tested: 1985 vs. 1987, New Jersey High School Graduates Only[2]

Course Category	1987 Total No.	Lack Proficiency 1987 No.	Lack Proficiency 1985 %	Lack Proficiency 1987 %	Appear Proficient In Some Areas 1987 No.	Appear Proficient In Some Areas 1985 %	Appear Proficient In Some Areas 1987 %	Appear to be Proficient 1987 No.	Appear to be Proficient 1985 %	Appear to be Proficient 1987 %
1. Business Math or General Math	1129	1019	88	90	98	10	9	12	2	1
2. Algebra I	1396	1126	73	81	226	21	16	44	6	3
3. Algebra I & Geometry	2313	1622	63	70	541	27	23	150	10	6
4. Algebra I & II	678	475	61	70	148	29	22	55	10	8
5. Algebra I, Geometry & Algebra II	6886	3037	37	44	2316	36	34	1533	28	22
6. Trigonometry (No Senior Math)	5035	979	14	19	1530	28	30	2526	58	50
7. Senior Math (No Trigonometry)	960	188	14	20	285	24	30	487	61	51
8. Algebra I & II Geometry & Trigonometry	1391	122	7	9	326	21	23	943	72	68
9. Calculus (No Senior Math)	2771	109	2	4	324	12	12	2338	85	84
10. Senior Math & Calculus	577	15	2	3	79	9	14	483	89	84
Overall	23,136	8,692	35	38	5,873	26	25	8,571	39	37

[1]See Appendix C for a description of proficiency categories.

[2]Recent high school graduates are those who graduated the spring prior to their enrollment in college. Limited-English-Proficient students are excluded.

TABLE 8

Relationship Between Mathematics Courses Completed in High School and the Elementary Algebra Proficiency[1] of the Students Tested: 1985 vs. 1987, New Jersey High School Graduates Only[2]

Course Category	1987 Total No.	Lack Proficiency 1987 No.	Lack Proficiency 1985 %	Lack Proficiency 1987 %	Appear Proficient In Some Areas 1987 No.	Appear Proficient In Some Areas 1985 %	Appear Proficient In Some Areas 1987 %	Appear to be Proficient 1987 No.	Appear to be Proficient 1985 %	Appear to be Proficient 1987 %
1. Business Math or General Math	1129	1116	99	99	12	2	1	1	0	0
2. Algebra I	1396	1333	94	95	60	5	4	3	0	0
3. Algebra I & Geometry	2313	2087	89	90	221	11	10	5	0	0
4. Algebra I & II	678	519	71	77	152	28	22	7	1	1
5. Algebra I, Geometry & Algebra II	5886	3597	50	52	2997	48	44	292	3	4
6. Trigonometry (No Senior Math)	5035	1078	20	21	2787	60	55	1170	20	23
7. Senior Math (No Trigonometry)	960	225	18	23	526	62	55	209	36	22
8. Algebra I & II Geometry & Trigonometry	1391	130	9	9	728	55	52	533	62	38
9. Calculus (No Senior Math)	2771	96	3	3	773	35	28	1902	67	69
10. Senior Math & Calculus	577	19	3	3	153	31	27	405	67	70
Overall	23,136	10,200	45	44	8,409	39	36	3727	16	20

[1]See Appendix C for a description of proficiency categories.

[2]Recent high school graduates are those who graduated the spring prior to their enrollment in college. Limited-English-Proficient students are excluded.

TABLE 9*

Five Year Comparison of Test Results Of Non-Recent Graduates[1]

1983 - 1987

	1983		1984		1985		1986		1987	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	7,376	40	7,134	41	6,978	43	6,670	41	6,230	44
Appear Proficienct in Some Areas	6,671	36	6,351	37	5,885	36	6,041	37	4,950	35
Appear to be Proficient	4,546	24	3,910	22	3,539	22	3,605	22	2,910	21
COMPUTATION										
Lack Proficiency[2]	10,988	58	12,617	56	9,685	57	10,104	59	9,057	62
Appear Proficienct in Some Areas	4,113	22	4,932	22	3,694	22	3,627	21	2,939	20
Appear to be Proficient	3,984	21	4,875	22	3,674	22	3,278	19	2,719	18
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	15,165	79	16,445	74	13,425	79	13,705	80	11,756	80
Appear Proficiency in Some Areas	2,959	16	4,056	18	2,789	16	2,414	14	2,249	15
Appear to be Proficient	961	5	1,832	8	799	5	887	5	710	5

*Includes those who may not have enrolled in college after being tested.

[1]See Appendix C for a description of proficiency categories; "non-recent" graduates are students whose diploma was received prior to this year of testing.

[2]Includes those students not attempting this portion of the test.

TABLE 10

Students Tested, Fall 1987, by Gender Within Sector

Gender	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Male	18,628	44	10,432	43	3,898	42	2,702	47	391	80
Female	23,101	54	13,017	54	5,364	57	3,022	53	85	17
No Response	874	2	668	3	107	1	29	1	13	3
TOTAL TESTED	42,603		24,117		9,369		5,753		489	

*Students from the participating independent colleges are included in statewide totals.

TABLE 11

Students Tested, Fall 1987, by Anticipated Enrollment Status Within Sector

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Full-Time	32,729	77	16,051	67	7,974	85	5,479	95	487	100
Part-Time	9,079	21	7,536	31	1,198	13	250	4	1	0
No Response	795	2	530	2	197	2	24	0	1	0
TOTAL TESTED	42,603		24,117		9,369		5,753		489	

*Students from the participating independent colleges are included in statewide totals.

TABLE 12

Students Tested, Fall 1987, by Year of High School Graduation

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
1987	28,253	66	12,604	52	7,419	79	5,247	91	456	93
1986	2,956	7	2,182	9	534	6	123	2	13	3
1985	1,494	4	1,133	5	244	3	60	1	6	1
Prior to 1985	7,819	18	6,484	27	916	10	281	5	8	2
Did Not Graduate	1,239	2	981	4	27	0	14	0	4	1
No Response	1,042	2	733	3	229	2	28	1	2	0

*Students from the participating independent colleges are included in statewide totals.

TABLE 13

Students Tested, Fall 1987, by High School Program

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Academic	26,975	63	11,837	49	7,260	78	5,187	90	394	81
General	8,127	19	6,033	25	1,247	13	396	7	67	14
Career	4,866	11	4,124	17	507	5	107	2	21	4
GED	1,282	3	1,154	5	89	1	14	0	4	1
Other	553	1	461	2	51	1	22	0	0	0
No Response	800	2	508	2	215	2	27	1	3	1

*Students from the participating independent colleges are included in statewide totals.

TABLE 14

Students Tested, Fall 1987, by Self-Reported High School Rank

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Highest Tenth	4,090	10	912	4	921	10	1,867	32	134	27
Second Tenth	5,687	13	1,906	8	1,572	17	1,674	29	122	25
Second Fifth	9,530	22	4,431	18	2,738	29	1,401	24	135	28
Middle Fifth	16,630	39	11,564	48	3,194	34	712	12	76	16
Fourth Fifth	3,684	9	2,999	12	455	5	39	1	12	2
Lowest Fifth	1,088	3	931	4	111	1	8	0	3	1
No Response	1,894	4	1,374	6	378	4	52	1	7	1

*Students from the participating independent colleges are included in statewide totals.

TABLE 15

Total Number of Years of English Studied in High School, Fall 1987

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
One	759	2	672	3	59	1	18	0	1	0
Two	1,538	4	1,324	6	144	2	32	1	9	2
Three	2,660	6	2,203	9	268	3	96	2	16	3
Four	36,039	85	18,834	78	8,576	92	5,502	96	460	92
No Courses	421	1	311	1	49	1	35	1	2	0
No Response	1,186	3	773	3	273	3	70	1	11	2

*Students from the participating independent colleges are included in statewide totals.

TABLE 16

Total Number of Years of Mathematics Studied in High School, Fall 1987

Self-Reported Information	Statewide*		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
One	1,077	3	926	4	106	1	26	1	1	0
Two	5,542	13	4,621	19	661	7	104	2	10	2
Three	12,602	30	7,880	33	2,959	32	842	15	29	6
Four	21,919	51	9,655	40	5,356	57	4,718	82	445	91
No Courses	478	1	374	2	49	1	32	1	2	0
No Response	985	2	661	3	238	3	31	1	2	0

*Students from the participating independent colleges are included in statewide totals.

TABLE 17

Mathematics Courses Taken in High School, Fall 1987

Self-Reported Information	Statewide**		County Colleges		State Colleges		Rutgers		NJIT	
	#	%*	#	%*	#	%*	#	%*	#	%*
General Math	15,985	38	11,571	48	2,425	26	1,079	19	106	22
Business Math	7,122	17	5,352	22	1,056	11	370	6	20	4
Algebra I	32,830	77	17,263	72	7,960	85	4,649	81	439	90
Algebra II	26,826	63	11,360	47	7,346	78	5,284	92	463	95
Geometry	30,260	71	13,826	57	7,981	85	5,423	94	470	96
Trigonometry	13,923	33	4,130	17	3,786	40	4,261	74	394	81
Senior Academic	4,442	10	1,253	5	1,297	14	1,261	22	149	31
Calculus	4,852	11	918	4	1,078	12	2,309	40	207	42
No Response	855	2	553	2	223	2	28	1	1	0

*Percentages exceed 100 since students may take more than one math course in high school.

**Students from the participating independent colleges are included in statewide totals.

TABLE 18

Background Data (in percent) of Students Tested Statewide, 1983-1987

	1983	1984	1985	1986	1987
SEX					
Male	45	44	44	44	44
Female	54	54	54	54	54
No Response	1	2	2	2	2
ENROLLMENT STATUS					
Full-Time	78	75	74	74	77
Part-Time	21	22	22	22	21
No Response	4	2	3	4	2
HIGH SCHOOL PROGRAM					
Academic	62	61	62	61	63
General	18	19	18	19	19
Career	14	13	13	12	11
GED	4	3	3	3	3
Other	1	1	1	1	1
No Response	2	3	3	4	2
HIGH SCHOOL RANK					
Highest Fifth	23	21	22	22	23
Second Fifth	23	22	22	22	22
Middle Fifth	40	40	39	38	39
Fourth Fifth	8	9	9	9	9
Lowest Fifth	2	2	2	2	3
No Response	4	6	5	7	4
ENGLISH BEST LANGUAGE					
Yes	92	91	88	90	92
No	5	5	5	5	5
No Response	3	4	7	5	3
OTHER LANGUAGE SPOKEN AT HOME					
Yes	15	15	16	15	16
No	84	82	79	81	82
No Response	1	2	5	4	2

TABLE 18A

Background Data (in percent) of Students Tested Statewide, 1983-1987

	1983	1984	1985	1986	1987
NO. OF YEARS OF HIGH SCHOOL ENGLISH					
One	2	2	2	2	2
Two	4	4	4	4	4
Three	6	6	5	6	6
Four	84	83	81	83	85
No Courses	1	1	1	1	1
No Response	3	4	7	5	3
NO. OF YEARS OF HIGH SCHOOL MATH					
One	4	4	3	3	3
Two	16	15	14	14	13
Three	29	29	28	29	30
Four	47	48	48	49	51
No Courses	1	1	1	1	1
No Response	2	3	7	5	2
MATH COURSES TAKEN IN HIGH SCHOOL[1]					
General Math	37	36	33	37	37
Business Math	17	16	16	17	17
Algebra 1	72	71	69	75	77
Algebra 2	56	56	56	59	63
Geometry	65	64	64	68	71
Trigonometry	27	27	28	30	33
Senior Academic	10	10	10	10	10
Calculus	9	9	10	10	11
No Response	2	3	6	5	2

[1]Percentages exceed 100 since students may take more than one math course in high school.

TABLE 19

Self-Reported Years of English Studied In High School
By Mean Scaled Scores on the Verbal Tests

1985 - 1987

YEARS STUDIED	NUMBER			TOTAL ENGLISH[1]			READING COMPREHENSION			ESSAY[2]			COMPOSITION[3]		
	1985	1986	1987	1985	1986	1987	1985	1986	1987	1985	1986	1987	1985	1986	1987
FOUR	35,935	36,709	35,841	165	165	165	163	163	163	7.4	7.3	7.2	167	166	166
THREE	2,459	2,717	2,625	159	159	158	157	157	157	6.5	6.4	6.1	161	160	159
TWO	1,425	1,665	1,519	156	157	154	154	155	154	6.1	6.0	5.5	158	158	155
ONE	782	784	749	151	153	150	149	152	150	5.5	5.4	4.7	153	154	151

[1]Total English is a composite score based on all reading and writing sections.

[2]Essay topics change yearly, therefore, mean scores can not be equated from year to year.

[3]Composition is a composite score based on Sentence Structure/Sense and Essay.

TABLE 20

Self-Reported Years of Mathematics Studied In High School
By Mean Scaled Scores on the Mathematics Tests

1985 - 1987

YEARS STUDIED	NUMBER			COMPUTATION			ELEMENTARY ALGEBRA		
	1985	1986	1987	1985	1986	1987	1985	1986	1987
FOUR	21,088	21,675	21,848	169	169	169	172	172	172
THREE	12,385	12,772	12,562	164	164	164	164	164	164
TWO	6,130	6,261	5,518	160	160	159	158	158	158
ONE	1,244	1,269	1,066	155	157	155	161	157	158

TABLE 21

Self-Reported Student Background Information by Sector, Fall 1987

	Statewide*		County Colleges		State Colleges		Rutgers University		NJIT	
	#	%	#	%	#	%	#	%	#	%
Consider themselves above average in written expression	21,795	51	10,344	43	5,288	56	4,252	74	281	57
Consider themselves average in written expression	17,742	42	11,520	48	3,545	38	1,374	24	184	38
Consider themselves below average in written expression	1,712	4	1,311	5	242	3	78	1	23	5
Want help to improve writing	10,341	24	5,391	12	2,099	25	1,675	29	200	41
Want help to improve reading	4,548	11	2,542	11	1,003	11	592	10	89	18
Want help to improve study habits	14,622	34	8,372	35	3,209	34	1,809	31	190	39
Consider themselves above average in mathematical ability	18,611	44	8,183	34	4,393	47	4,259	74	408	83
Consider themselves average in mathematical ability	18,238	43	11,722	49	3,915	42	1,303	23	73	15
Consider themselves below average in mathematical ability	4,366	10	3,225	13	777	8	148	3	7	1
Want help to improve mathematics	14,568	34	8,804	37	3,036	32	1,548	27	163	33

*Students from the participating independent colleges are included in statewide totals.

APPENDIX A

Description of the New Jersey College Basic Skills Placement Test

One purpose of the NJCBSPT is to help determine which students admitted to college need remedial instruction in certain basic skills; that is, the test was designed to discover which of the entering students do not have the level of skills generally expected of college freshmen and deemed necessary for successful completion of their academic programs. Thus, the basic skills measured by the test are defined not as the skills necessary to survive in the world (e.g., filling out applications, reading directions on medicine bottles, or the like) but as the skills needed to read college textbooks, to write papers for class, to solve mathematical problems, and, indeed, to succeed in a technological society.

The portions of the NJCBSPT dealing with verbal skills yield the following scores:

1. Reading Comprehension.
2. Sentence Sense.
3. Essay.
4. Composition, a composite score based on the Sentence Sense and Essay sections.
5. Total English score, a composite score based on the Reading Comprehension, Sentence Sense, and Essay sections.

A more detailed explanation of the test can be found in Interpreting Scores on the New Jersey College Basic Skills Placement Test, and a more detailed explanation of the writing sample can be found in Scoring the Essays; both booklets are available from the Department of Higher Education (see inside back cover).

Reading Comprehension (47 questions, 50 minutes)

The Reading Comprehension section of the test measures students' ability to understand a written text, to extract the main idea from the text, and to draw appropriate inferences from it. Most, but not all, of the questions testing these skills are related to passages printed in the test book. The passages cover a variety of subjects and represent a variety of writing purposes and styles.

Students taking the test are expected to read the passages carefully, not merely skim them; they are expected to know what the text actually says, not merely what they think it might say. Close reading and attention to detail are expected, as is attention to tone. Students are expected to be able to generalize about the ideas in the passage and the method of their presentation. They are also expected to be able to identify ideas found in the passage when those ideas are stated in different words and to understand and identify the assumptions made by the author and the implications of the text.

For those NJCBSPT questions that are unrelated to passages, students are asked to identify the generalization that is supported by a group of statements or to identify the idea that best supports a given generalization.

Sentence Sense (40 questions, 35 minutes)

The Sentence Sense section uses two kinds of multiple-choice questions. The first requires students to identify faults in sentences and make appropriate corrections. The second asks students to rewrite sentences, much as they would do when editing their own writing.

The problems presented to the student for correction are concerned mainly with the structure and logic of sentences, not with grammar or punctuation. Questions deal with expressing ideas clearly and accurately, appropriately coordinating or subordinating ideas within sentences, and recognizing complete sentences. The types of questions used ask students either to identify problems and correct errors in sentences or to recast sentences to change structure or emphasis - tasks they might perform when they themselves write.

Essay (20 minutes)

In evaluating writing samples, the faculty members who serve as scorers take into consideration every aspect of the writing, from subject-verb agreement to organization of ideas, from use of the comma to appropriateness of examples, from spelling to style. Each sample receives two independent scores on a six-point scale. The score reported for the essay is the sum of these two scores. Thus, the highest obtainable score is 12, and the lowest is two. For further information on scoring, refer to the NJCBSPT publication Scoring the Essays (see inside back cover).

Computation (35 questions, 40 minutes)

This section of the test measures the ability to perform basic arithmetic operations and to apply the operations to the solution of problems that involve fundamental arithmetic concepts. The questions cover operations with whole numbers, operations with fractions, operations with decimals and percents, and arithmetic reasoning.

Elementary Algebra (35 questions, 40 minutes)

This section of the test measures the ability to perform basic algebraic operations and to apply the operations to the solution of problems that involve elementary algebraic concepts. It tests operations with real numbers, operations with algebraic expressions, and the ability to solve equations, inequalities, and word problems.

APPENDIX B
1 of 6

NJCBSPT Mean Scaled Scores

Statewide

1983 - 1987

	1983	1984	1985	1986	1987
Number of Students Tested	51,321	46,465	44,344	44,284	42,603
MEAN SCALED SCORES:					
Reading Comprehension	163	161	161	161	161
(Standard Deviation)	(12.9)	(13.2)	(13.0)	(13.2)	(13.4)
Sentence Structure/Sense	165	164	164	164	164
(Standard Deviation)	(11.5)	(11.6)	(11.6)	(11.6)	(11.8)
Essay	6.5	7.0	7.1	7.1	6.9
(Standard Deviation)	(2.1)	(2.0)	(1.9)	(1.9)	(2.0)
Composition[1]	165	165	165	165	165
(Standard Deviation)	(10.7)	(10.9)	(11.1)	(11.2)	(11.4)
Total English[2]	164	163	163	164	163
(Standard Deviation)	(11.5)	(11.5)	(11.6)	(11.8)	(11.8)
Math Computation	165	165	165	165	166
(Standard Deviation)	(10.5)	(10.5)	(10.5)	(10.5)	(10.5)
Elementary Algebra	167	167	167	167	168
(Standard Deviation)	(11.8)	(11.6)	(11.7)	(11.9)	(11.8)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

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NJCBSPT Mean Scaled Scores

County Colleges

1983 - 1987

	1983	1984	1985	1986	1987
Number of Students Tested	30,677	28,191	26,288	26,322	24,117
MEAN SCALED SCORES:					
Reading Comprehension	159	158	158	158	157
(Standard Deviation)	(13.4)	(13.4)	(13.1)	(13.5)	(13.5)
Sentence Structure/Sense	162	161	161	161	161
(Standard Deviation)	(12.0)	(11.9)	(11.8)	(11.9)	(12.1)
Essay	6.0	6.6	6.7	6.6	6.4
(Standard Deviation)	(2.1)	(2.0)	(1.9)	(1.9)	(2.0)
Composition[1]	162	162	162	162	161
(Standard Deviation)	(10.8)	(11.0)	(11.2)	(11.3)	(11.3)
Total English[2]	161	160	160	160	160
(Standard Deviation)	(11.6)	(11.5)	(11.5)	(11.7)	(11.6)
Math Computation	162	162	162	162	162
(Standard Deviation)	(10.1)	(10.1)	(10.2)	(10.1)	(10.1)
Elementary Algebra	162	162	162	162	163
(Standard Deviation)	(9.9)	(9.7)	(9.8)	(9.8)	(9.8)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

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NJCBSPT Mean Scaled Scores

State Colleges

1983 - 1987

	1983	1984	1985	1986	1987
Number of Students Tested	10,981	9,767	9,237	8,817	9,369
MEAN SCALED SCORES:					
Reading Comprehension	166	164	163	164	164
(Standard Deviation)	(11.0)	(11.6)	(11.7)	(11.8)	(11.9)
Sentence Structure/Sense	168	167	167	167	168
(Standard Deviation)	(9.8)	(10.0)	(10.2)	(9.9)	(9.8)
Essay	7.0	7.4	7.4	7.4	7.3
(Standard Deviation)	(1.9)	(1.8)	(1.7)	(1.7)	(1.8)
Composition[1]	168	168	167	167	168
(Standard Deviation)	(9.2)	(9.4)	(9.7)	(9.6)	(9.8)
Total English[2]	167	167	166	166	166
(Standard Deviation)	(9.7)	(9.9)	(10.1)	(10.2)	(10.2)
Math Computation	168	167	168	168	168
(Standard Deviation)	(9.2)	(9.3)	(9.2)	(9.3)	(9.1)
Elementary Algebra	169	169	169	169	170
(Standard Deviation)	(10.8)	(10.5)	(10.3)	(10.7)	(10.7)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

APPENDIX B
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NJCBSPT Mean Scaled Scores

Rutgers

1983 - 1987

	1983	1984	1985	1986	1987
Number of Students Tested	6,251	5,856	6,550	6,753	5,573
MEAN SCALED SCORES:					
Reading Comprehension	171	170	170	170	170
(Standard Deviation)	(8.0)	(8.6)	(8.6)	(8.7)	(8.8)
Sentence Structure/Sense	172	173	172	172	173
(Standard Deviation)	(7.1)	(7.1)	(7.2)	(7.3)	(7.3)
Essay	7.9	8.2	8.2	8.2	8.2
(Standard Deviation)	(1.7)	(1.6)	(1.5)	(1.5)	(1.8)
Composition[1]	173	173	173	173	173
(Standard Deviation)	(7.3)	(7.3)	(7.7)	(7.7)	(8.1)
Total English[2]	173	172	172	173	173
(Standard Deviation)	(7.4)	(7.6)	(8.0)	(8.0)	(8.3)
Math Computation	174	174	174	174	175
(Standard Deviation)	(6.8)	(6.8)	(6.7)	(7.0)	(6.9)
Elementary Algebra	179	179	179	179	180
(Standard Deviation)	(9.6)	(9.3)	(9.6)	(9.4)	(9.4)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

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NJCBSPT Mean Scaled Scores

NJIT

1983 - 1987

	1983	1984	1985	1986	1987
Number of Students Tested	599	541	497	472	489
MEAN SCALED SCORES:					
Reading Comprehension	169	162	165	167	165
(Standard Deviation)	(10.2)	(11.5)	(12.0)	(10.4)	(11.6)
Sentence Structure/Sense	170	169	168	169	168
(Standard Deviation)	(8.9)	(9.5)	(10.4)	(9.5)	(10.9)
Essay	7.0	7.5	7.1	7.2	7.2
(Standard Deviation)	(1.9)	(1.9)	(1.8)	(1.6)	(1.9)
Composition[1]	169	169	167	168	167
(Standard Deviation)	(8.8)	(9.6)	(10.2)	(9.2)	(10.7)
Total English[2]	169	168	166	168	167
(Standard Deviation)	(9.2)	(10.3)	(10.7)	(9.7)	(10.9)
Math Computation	176	175	175	176	175
(Standard Deviation)	(5.1)	(6.1)	(5.7)	(5.8)	(6.7)
Elementary Algebra	183	181	182	183	181
(Standard Deviation)	(6.5)	(7.7)	(7.3)	(6.7)	(8.2)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay.

[2]Total English is a composite score based on all three reading and writing sections.

APPENDIX B
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NJCBSPT Mean Scaled Scores

Statewide Comparison of Recent High School Graduates*

1983 - 1987

	1983	1984	1985	1986	1987
Number of Recent High School Graduates	32,236	28,466	27,291	27,447	28,169
Percent of Total Test Takers	63%	61%	62%	63%	66%
TOTAL ENGLISH					
Number Completing Test	31,538	28,401	27,262	27,156	27,805
Not Attempted	192	65	29	291	83
Mean Score	166	165	165	165	165
Standard Deviation	10.2	10.5	10.5	10.7	10.8
MATH COMPUTATION					
Number Completing Test	31,661	28,438	27,274	27,406	27,844
Not Attempted	69	28	17	41	44
Mean Score	167	167	167	167	168
Standard Deviation	9.6	9.8	9.7	9.8	9.7
ELEMENTARY ALGEBRA					
Number Completing Test	29,995	27,134	25,742	26,055	26,902
Not Attempted	1,735	1,332	1,549	1,392	986
Mean Score	169	169	169	170	170
Standard Deviation	11.5	11.3	11.4	11.6	11.5

*For each year, the most recent high school graduates are those who graduated the spring prior to their enrollment in college.

APPENDIX C

A Description of the Proficiency Levels Established by the Basic Skills Council as a Guide For College Placement Procedures

Based upon its understanding of the content and difficulty level of the test, and upon the recommendations of its advisory committees, the Council offers the following general propositions to assist in understanding the test results presented in this report.

Verbal Skills

For the purpose of this report, students who scored below 161 on Total English* were placed in the "Lack Proficiency" category. Those who fell in the 161-172 range on Total English were placed in the "Appear to be Proficient in Some Areas" category while those students above 172 on Total English "Appear to be Proficient." A more precise understanding of an individual student's scores can be achieved by considering the following.

In the Council's judgment, all students with essay scores of 2, 3 or 4, and those students with an essay score of 5 or 6 but fewer than 80 percent correct on either of the two multiple-choice tests, are seriously deficient in their use of written language. An essay score of 2, 3, or 4 indicates pronounced weakness in writing: in these essays the message is not always clear, the idea is either not developed or not logical, and the conventions of written language are usually not observed. An essay score of 5 or 6, together with fewer than 80 percent correct on one or both of the multiple-choice tests, indicates a need for help in following the conventions of written language, and in developing and comprehending an idea in a coherent manner.

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*Total English is a composite score based on all three reading and writing sections.

Many students exhibit a pattern of performance that must be reviewed more carefully, since they probably require some assistance in one or more areas according to the requirements and standards of the individual colleges. Students in this category either did not demonstrate proficiency in one or more areas, or their essay and multiple choice scores may have exhibited a discrepancy. For example, a high essay score and a low sentence sense score is a pattern that bears examination. Essay scores of 5, 6 or 7 together with multiple-choice scores above 80 percent are "average" in that the essays tend to lack depth and coherence and, despite the multiple-choice scores, the writing samples may exhibit flaws in structure and/or language conventions. An essay score of 7 combined with scores of less than 80 percent correct on one or both of the multiple-choice tests indicates at best a marginal performance. An essay score of 8-12 combined with fewer than 80 percent correct on any one of the multiple-choice tests is a discrepant pattern, since the essay score indicates a range from above average to excellent, and the multiple-choice scores appear to contradict the essay score.

Students with essay scores of 8-12 and 80 percent correct on both multiple-choice tests seem to be proficient in the basic skills of reading and writing. The writers of these essays have control of both the language and the structures they are using; generally speaking, they can comprehend a relatively mature idea and develop it in standard English.

Computation

A scaled score of 164 or below (18 or fewer questions correct out of 30 on the 1987 test) indicates pronounced weaknesses in dealing with certain computational operations and, in particular, with problems involving percentages and decimals. Declining scores indicate progressively greater difficulty with operations involving fractions. Students scoring below 165 on the computation test are included in the category: "Lack Proficiency."

The range of scaled scores from 165 to 172 (19 to 24 questions correct) indicates greater familiarity with elementary computation but still shows definite weaknesses. The particular weaknesses of a student can be identified only by examining individual item responses. Students falling in the range of 165 to 172 on the computation test fall in the category: "Appear to be Proficient in Some Areas."

Students who achieve a scaled score of at least 174 (25 questions correct) seem to be proficient in the elementary computational skills measured by this test and fall in the "Appear to be Proficient" category.

Elementary Algebra

Students who achieve a scaled score of 166 or below (13 or fewer questions correct out of 30 on the 1987 test) lack any understanding of elementary algebra. Such students may possess a smattering of knowledge but have difficulty with a wide variety of elementary operations, and are not able in general to perform sustained operations involving a succession of simple steps. Students in this category ("Lack Proficiency") probably need to restudy elementary algebra from the beginning.

The particular difficulties of students who score in the scale range from 167 to 182 (14 to 24 questions correct) vary. They have some misconceptions, have some trouble dealing with equations involving letters rather than numbers, and probably cannot handle sustained operations well. The type of assistance or course work such students may require will depend on each student's background and can be determined by careful examination of the particular patterns of item responses. Students scoring in the range of 167 to 182 on elementary algebra are included in the "Appear to be Proficient in Some Areas" category.

Students who achieve a scaled score of 183 and above (25 or more questions correct) seem to have no widespread weaknesses in performing elementary algebraic operations and fall in the "Appear to be Proficient" category. They probably can do simple, sustained operations. The test, however, does not extend far enough in difficulty level to determine whether students scoring in this highest range are able to complete a more complex succession of simple operations.

APPENDIX D

Items Representative of Those Included on the NJCBSPT, Mathematics Section
(Items are multiple choice in the actual test)

COMPUTATION

Item

1. $\begin{array}{r} 8.35 \\ \times\ 4.7 \\ \hline \end{array}$
2. $\frac{2}{5} + \frac{1}{2} = ?$
3. $35.2 - 8.07 = ?$
4. If 6 pounds of cheese cost $8.04, how much will 4 pounds cost?
5. $\frac{7}{8} \div \frac{3}{5} = ?$
6. 30 percent of 200 = ?
7. $\frac{9}{20}$ expressed in decimal form is?
8. $7\frac{1}{8} - 3\frac{1}{6} = ?$
9. $0.6\overline{)360}$
10. If the price of a $0.60 pad of paper is increased by 15 percent, what is the new price?
11. $\frac{8}{\frac{1}{4}} = ?$
12. 20 is 8 percent of what number?

ELEMENTARY ALGEBRA

Item

1. $10a - 8b - 3a + 2b = ?$
2. $(3x + 1)(5x - 1) = ?$
3. If $7x - 3 = 2$, then $x = ?$
4. If $4x = 9 - 7x$, then $x = ?$
5. The value of $y = 3x^2 - 5x + 7$ when $x = -2$ is ?
6. $(3a + 4)^2 = ?$
7. If $6(x - 2) + 5 = 2x$, then $x = ?$
8. A factor of $x^2 + 2x - 15$ is ?
9. $\frac{b^8}{b^4} = ?$
10. If $\frac{3}{5}x - 2 = \frac{4}{3}$, then $x = ?$
11. In the solution of the system of equations below, what is x?

    $(3x - y) = 11$

    $(5x = 2y) = 4$
12. If $ax = c - bx$, then $x = ?$

APPENDIX E

Comparison of Statewide Self-Reported Student Background Information

1983 - 1987

	1983		1984		1985		1986		1987	
	#	%	#	%	#	%	#	%	#	%
Consider themselves above average in written expression	26,631	52	23,554	51	22,408	51	22,337	50	27,795	51
Consider themselves average in written expression	20,862	41	18,849	41	16,966	38	17,927	40	17,742	42
Consider themselves below average in written expression	2,062	4	1,906	4	1,588	4	1,844	4	1,712	4
Want help to improve writing	11,209	22	10,061	22	9,507	21	10,342	23	10,344	24
Want help to improve reading	5,911	12	5,028	11	4,592	10	4,908	11	4,542	11
Want help to improve study habits	16,327	32	14,603	31	13,525	31	14,675	33	14,622	34
Consider themselves above average in mathematical ability	22,499	44	20,029	43	18,963	43	18,694	42	18,611	44
Consider themselves average in mathematical ability	21,939	43	19,608	42	17,898	40	18,789	42	18,238	43
Consider themselves below average in mathematical ability	5,015	10	4,603	10	3,993	9	4,601	10	4,366	10
Want help to improve mathematics	16,725	33	15,096	33	13,827	31	15,227	34	14,568	34

APPENDIX F

Participating Independent Colleges/Universities

Berkeley School

Caldwell College

Centenary College

Drew University

Fairleigh Dickinson University
Rutherford, Madison & Teaneck Campuses

Felician College

Georgian Court College

Northeastern Bible College

Seton Hall University

Upsala College

Westminster Choir College

APPENDIX G

NJCBSPT Year to Year Score Equating

A raw score on a test is computed simply by adding the points awarded for each correct answer. The scores reported for the NJCBSPT are scaled scores. They are determined by applying a conversion formula to the raw scores. The reason for reporting scaled scores is that they can be made comparable across different years, since for each year a new form of the test is used.

Equating is the statistical process that makes it possible to report scaled scores that have essentially the same meaning for different forms of a test. Scores on each new form of the NJCBSPT are equated to scores on the previous form. These scores on the previous form are already "on scale." That is, the formula or table that converts raw scores to scaled scores on the previous form has already been defined. The equating process links each possible raw score on the new form to a scaled score on the previous form.

Simply put, the object of equating is to have the same scaled score on any form of the test represent the same level of the ability the test is measuring. A scaled score of "165," for example, would mean the same thing from one year to the next. However, this definition is not precise enough to serve as the basis for a statistical procedure. A more precise definition is the "equipercentile" definition. It states that a score on one form of the test is equated to a score on another form in a group of students if the two scores have the same percentile rank in that group of students. For example, suppose that in a group of students the 34th percentile on Form A of a test is a raw score of 12; that is, 34 percent of the students scored below 12 on Form A. And suppose that in this same group of students, the 34th percentile on Form B is a raw score of 13; that is, 34 percent of the same group of students scored below 13 on Form B. Then in this group of

students a raw score of 13 on Form B would equate to a raw score of 12 on Form A, and these two raw scores would correspond to the same scaled score. This definition forms the basis for the equating of NJCBSPT scores. Methods based on other, simpler definitions are often used, but only when their results are consistent with the results of methods based on the equipercentile definition.

For the NJCBSPT, there is no group of students taking the new form and the previous form under the same conditions (i.e., at approximately the same time, with no instruction in between). The information that links the new form with the previous form is provided by "common items"--questions repeated from the previous form of the test. The equating methods used for the NJCBSPT assume that students with the same score on the common items would do equally well or poorly on the non-common items of the test. We will know that a group of students have a higher level of basic skills when they perform better on equating items (ca. 40% of the test) than the group who took the test the previous year.

For example, suppose we focus our attention on the students who took last year's form and answered exactly 10 of the common items correctly. Suppose their average raw score on the full test (last year's form) was 19. Then we would assume that this year's students who answered 10 of the common items correctly would also have had an average raw score of 19 on last year's form, if they had taken it.

This assumption makes it possible to estimate the scores that this year's students would have earned on last year's form and also the scores that last year's students would have earned on this year's form of the test. Therefore, it is possible to estimate the percentiles on either form in the combined group of this year's students and last year's students. The equating is based on the estimated percentiles (or other score statistics) in this combined group.

Some of the equating methods used for the NJCBSPT automatically produce a "linear" equating formula--one that can be represented on a graph by a single straight line. Methods based on the equipercentile definition of equating produce a table linking each score on the new form to a score on the old form, but this table cannot be precisely represented by a simple formula. However, the statisticians who equate the NJCBSPT now approximate this table by a series of linear equating formulas--different formulas in different portions of the score range.

ETS performs score equating on the basis of the test results received by June and again on the basis of the cumulative results received through October. Each of these equatings includes the application of at least three statistical models: two linear models and one curvilinear model. A second curvilinear model is used if there is evidence of curvilinearity in the equating results. The standard ETS equating software includes linear models based on the work of Tucker and Levine (see reference below). When there is little evidence of curvilinearity, the Tucker method is preferred if the old and new form samples of students are quite similar in anchor test means and variance, while the Levine method is preferred if the samples of students differ substantially in anchor test means or variances. When old and new test forms differ in length, as did the Reading Comprehension test between the forms in 1984 and 1985, the Levine method for tests of unequal reliabilities is used in place of the Levine method for test of equal reliabilities. The standard ETS method includes a curvilinear model based on an equipercentile equating of the new form to the old form by equating each to the anchor test of common items. A second curvilinear equating method is equipercentile equating, based on frequency estimation. The above equating models are described in Angoff's chapter of Educational Measurement (edited by R. L. Thorndike, American Council on Education, 1971). The equating procedures are performed with a package of standard ETS equating computer programs. The programs

have been successfully used in ETS testing programs (including the NJCBSPT) for many years. ETS measurement statisticians review the results of all equating models applied and choose the raw-to-scale score conversion that best reflects the differences in test difficulty indicated by the equating results.

Each year, after the June scoring cycle, ETS issues to the colleges the "final form" of the raw to scaled score conversion table that links the NJCBSPT scaled scores from year to year.

NJCBSPT Publications and Related Reports*

FUTURES: Making High School Count. New Jersey Basic Skills Council, 1987.

Student Information Bulletin 1988.

Interpreting Scores on the New Jersey College Basic Skills Placement Test.

Interpreting Mathematics Scores on the New Jersey College Basic Skills Placement Test.

Scoring the Essays.

Teaching Reading & Writing. Observations derived from results of the New Jersey College Basic Skills Placement Test. New Jersey Basic Skills Council, 1984.

Report on the Character of Remedial Programs in New Jersey Public Colleges and Universities, Fall 1984. New Jersey Basic Skills Council, 1985.

Report on the Effectiveness of Remedial Programs in New Jersey Public Colleges and Universities, Fall 1983 - Spring 1985. New Jersey Basic Skills Council, 1986.

Report to the Board of Higher Education on Results of the New Jersey Basic Skills Placement Testing, Fall 1986. New Jersey Basic Skills Council, June 19, 1987.

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*Publications and reports are available from the Basic Skills Assessment Program, New Jersey Department of Higher Education, 225 West State Street, CN 542, Trenton, NJ 08625.